

REPORT

**WAIMEA WATER AUGMENTATION
COMMITTEE/TASMAN DISTRICT
COUNCIL**

**Waimea Water Augmentation
Component 3 - Environmental
and Economic Assessment**

Report prepared for:

**WAIMEA WATER AUGMENTATION COMMITTEE/TASMAN DISTRICT
COUNCIL**

Report prepared by:

TONKIN & TAYLOR LTD

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1 Introduction

In November 2004, Tonkin and Taylor Ltd (T&T) was commissioned by the Waimea Water Augmentation Committee (WWAC) and Tasman District Council (TDC) to undertake Phase 1 of a feasibility study of water storage in the upper parts of the Wairoa/Lee catchments in Tasman District. The specific brief was to address the recurrent water shortages experienced on the Waimea Plains and to investigate enhancing water availability for consumptive and environmental/community/aesthetic benefits downstream on the Waimea Plains and surrounds.

The basic principle behind the project has been to develop an augmentation scheme that would capture river flows (leaving an appropriate residual flow in the river), store the water in a reservoir, and then allow release of that stored water into the river system during periods of high water demand and/or low natural river flows to augment those supplies, either directly or via a recharging of the groundwater system.

The project is multi-disciplinary and Phase 1 (preliminary) feasibility has extended over a three year period. It has four main components:

1. water demand and availability analysis
2. identification of storage options, and water delivery methods and costs
3. environmental assessment, and economic analysis of scenarios with and without augmentation
4. water allocation for optimisation of water use, environmental/community benefits/funding.

This report addresses Component 3 – preliminary assessment of the environmental issues relating to the project and the economic analysis of water augmentation. It also contains information relating to Component 4, pertaining to environmental and community benefits and funding options.

The work has been undertaken in stages in an iterative way, reflecting the process of identifying potential storage sites, providing environmental input to the selection process (Component 2), and providing essential information to the water availability modelling (Component 1).

The following work has been undertaken in this Component:

- assessment of the likely environmental issues associated with a range of potential storage sites
- assessment of the broad-scale environmental constraints to refine the list to small number of practical storage sites
- refinement of environmental issues to determine up to three possible storage options
- a cultural impact assessment of the Waimea Basin and catchment
- review of existing information on aquatic ecology to guide further information needs
- assessment of instream habitat flow requirements for storage modelling
- identification of issues and mitigation options specifically related to Site 11 Lee
- a comparative assessment of indigenous vegetation values in the Lee and Wairoa catchments
- a survey of the presence of whio (blue duck) in the Lee and Wairoa Catchments

- a preliminary assessment of recreational use of the Lee and Wairoa catchments
- an economic analysis of the storage option for Site 11 Lee, including assessing the cost of augmentation in comparison with the lost opportunity cost if the project did not proceed.

The work comprising Component 3 has been managed and undertaken by T&T, with specialist inputs to the study being provided by a range of sub-consultants. This report presents the subconsultants' full reports as Appendices. Summaries of each of the reports are presented in the overall **Summary Report** for the project, prepared by T&T.

Clarification Note: The NZMS topographic map names the branches of the Wairoa River as follows:

- Left Branch – this is the eastern branch
- Right Branch – this is the western branch

This naming is opposite to the usual convention of referring to right and left branches (or banks) to reflect the orientation when facing **downstream**. To avoid confusion in this report we have endeavoured to make it clear by including reference to the east or west in our descriptions.

2 Assessment of Potential Storage Sites

The assessment of potential storage sites was undertaken in a staged way, starting with a large number of sites, and gradually narrowing the list down through an assessment of engineering, environmental and social factors.

The assessment was undertaken in conjunction with WWAC and its Project Manager.

The process that was followed is described in the **Component 2 Report: Storages Assessment**. The appendices to that report contain the information relating to the environmental assessment, including that relating to the comparative assessment between Sites 11 and 15 and all collated information on the alternative site (Site 15 Left (eastern) Branch Wairoa River).

3 Cultural Impact Assessment

The Motueka Iwi Resource Management Advisory Komiti (MIRMAK) has commenced a cultural impact assessment (CIA) for the project. The report of the work for Phase I of the investigations addressed generic issues facing a potential development in either the Lee or the Wairoa catchments. It did not focus on any differences between the sites.

For this part of the process, MIRMAK initially presented a draft CIA report to WWAC. That report and its recommendations were considered by WWAC, and a further meeting held with MIRMAK representatives to discuss the details. Subsequently MIRMAK finalised the CIA report.

Tangata Whenua have advised WWAC in their report that the process of cultural impact assessment will continue at least until such time as the issues raised by Tangata Whenua have been fully addressed.

Motueka Iwi Resource Management Advisory Komiti's full report is attached as **Appendix 1**.

4 Aquatic Ecology and Water Quality

Cawthron have prepared three reports for this phase of the investigations. These are presented as **Appendices 2, 3 and 4**.

Cawthron's three reports are:

- Review of Biological Data relating to the Waimea River Catchment (Appendix 2).
- Instream Habitat Flow Analysis for the Waimea River and Provisional Minimum Flows for the Proposed Dam Sites in the Upper Wairoa and Lee Catchments (Appendix 3).
- Issues and Mitigation Options Associated with Storage in the Lee River (Appendix 4).

5 Indigenous Vegetation

An assessment of the indigenous vegetation values of the footprint of the potential dam and reservoir at the two preferred sites (Site 11 Lee and Site 15 Left (eastern) Branch Wairoa), and downstream values likely to be affected by changed flow regime was undertaken by Dr Philip Simpson (Uruwhenua Botanicals).

The full report is attached as **Appendix 5**.

6 Blue Duck (whio)

A survey was undertaken in November 2005 by Dave Barker for the presence of blue duck (whio) in the area of the Lee and Wairoa Catchments potentially affected by a dam and reservoir.

The Department of Conservation subsequently provided comment on that report.

The full report is attached as **Appendix 6**.

7 Archaeology/Heritage Values

TDC records show no specific sites of significance in the potentially affected area. Iwi have recommended that a taonga survey be undertaken in the next phase of investigations.

The "Inventory and Maps of Important Geological Sites and Landforms in the Nelson and Marlborough Regions, including the Kaikoura District" shows no sites in the area potentially affected by the storage system.

8 Recreational Values

8.1 Lee Valley

The lower Lee Valley is a popular recreational resource. However the upper Lee Valley appears to be of lower value, largely due to its lack of access (a locked gate exists at the Cement Works).

Specific comments are as follows:

Informal recreation

- It is unlikely that there are any picnic sites within the stretch of river that would be directly affected by the storage reservoir.
- There are several picnic areas in the lower Lee Valley, as well as the Regional Girl Guide Lodge.

Kayaking (Ron Wastney, Training and Conservation Officer Nelson Canoe Club, pers. comm.)

- The stretch of river that would be directly affected by the storage reservoir is of low value for kayaking. The stretch from the Cement Works downstream is of medium value for kayaking (Class 2-3 rapids when the river is high).
- Parts of it are used by beginners, but it is not high value to serious kayakers.
- Above the Cement Works the river is mostly gorge and access is difficult. Even at relatively easy river flows it is dangerous (Class 4-5 rapids during a fresh – is a very technical paddle)
- Creation of a dam on the Lee River is unlikely to draw much (if any) opposition from kayakers.

Trout fishing

- The Lee is not as significant a trout fishing river as the Wairoa, due largely to difficult access. It is smaller than the Wairoa and is perceived to hold fewer fish, although the fish are of good size (Grant Irvine, local angler, pers. comm. as reported by Cawthron).
- It is expected that lack of access to the upper reaches restricts fishing in the reach potentially affected by the storage system. It is not known how far trout move up the system (Neil Deans, F&G pers. comm.).

Richmond Forest Park access

- Anslow Road and Bush Road provide some access to Richmond Forest Park. Legal access to the Park exists up the true right bank of the Lee River, although few people either know this or use the access. The valley provides an emergency exit point from the Park. (Neil Deans, F&G pers. comm.).
- The NZMS 260 topographic map also shows a track on the eastern side of the river and “Waterfall Creek Hut”. The significance of this to trampers and hunters would need to be determined during further investigations, although we understand the hut may no longer exist.

8.2 Wairoa Valley

The mid and lower Wairoa River and Valley are a popular recreational resource.

Richmond Forest Park access

- Old Mill Road extends as a gravel road to the area that would be directly affected by a dam and reservoir based on Site 15. The road provides a significant access point to Richmond Forest Park via a track system to Ben Nevis.

Informal recreation

- There are presently two formal picnic sites within the downstream stretch of river near the Forks area, as well as the Forks area itself at the bridge (off the rock formation).
- The downstream river contains good swimming areas.

Kayaking (Ron Wastney, Training and Conservation Officer, Nelson Canoe Club, pers. comm.).

- The stretch of river that would be directly affected by a potential reservoir based on Site 15 is of high value for both white water and its scenic value. This value extends downstream to Stillwells Bridge (mid Gorge). Below this (from Stillwells Bridge to the Lee confluence) is of low value for white water but does have high scenic value.
- Kayakers generally enter the river at the ford approximately 1km upstream of the Gibbs Creek confluence (ie within what would be the reservoir footprint) and come out at either the Forks (and redo this section) or continue to Stillwells (approximately 5 hour run). This section is used (by approximately 10 'hard core' Nelson kayakers every time there is a fresh in the river; ie when the flow as measured at Irvines reaches 40-50 m³/s (equates to approximately 15 m³/s at the top part of the river stretch).
- Little use is made of the river in summer unless there is a good fresh (which usually only lasts for a day).
- A proposal to dam the Wairoa Left (eastern) Branch would be opposed by kayakers.
- Information previously obtained by ESR notes that members of the Nelson Canoe Club consider the Wairoa River, when in flood, to be one of the premium rivers. It may be used by up to 100 kayakers when the river is high.

Trout fishing

- The Wairoa is a good trout fishing river. Grant Irvine (a local angler) rates the Wairoa River highly and lists its proximity to Nelson and Richmond as a major attraction. However the river is not heavily fished and as a result the trout are relatively easy to catch. The aesthetic values of the river are also valued (Grant Irvine, pers. comm. reported by Cawthron). It is not clear whether these comments apply to the upper Wairoa (Left Branch), especially given its difficult access.

9 Community Issues

9.1 Values of Lee and Wairoa Valleys

Under a separate contract with WWAC/TDC, ESR undertook a community survey on the values of the Lee and Wairoa River Valleys.

ESR's report is attached as **Appendix 7**.

9.2 Community Views on Water Augmentation

In October 2006 WWAC distributed a survey to all ratepayers in Richmond and the Waimea Plains. The report of this survey (by WWAC) is attached as **Appendix 8**.

9.3 Community Consultation

Community liaison was not part of the study team's current Phase 1 brief. However it is noted that WWAC and TDC have separately conducted consultation with parts of the local community over the potential for water augmentation. This has comprised public meetings, meetings of Wairoa and Lee Valley residents and establishment of a Wairoa and Lee Valley Community Liaison Group.

Key stakeholder groups are also represented on WWAC (representatives of water user groups, Tasman District Councillors, Department of Conservation, a Tangata Whenua representative, Fish and Game, and Nelson City Council staff). These representatives have provided key feedback and input to the study.

10 Planning Issues

A preliminary assessment of the augmentation scheme has been undertaken with regard to planning issues. These issues will need to be explored further in Phase II investigations, as the project develops.

Under the Tasman Resource Management Plan (TRMP), the storage site for Site 11 Upper Lee is mainly zoned Rural 2, apart from the top end of reservoir which is zoned Conservation (Mt Richmond Forest Park).

There are no denotations on the TRMP Area Maps.

There appear to be no obvious inconsistencies with the objectives and policies for the Zones. Special attention will however need to be paid to the following objectives:

- maintenance of public access to and along margins of rivers which are of recreational value (objective 8.1.0)
- protection and enhancement of biological diversity and integrity of terrestrial, freshwater and coastal ecosystems, communities and species (objective 10.1A.0)

Site 11 is within the Upper Catchments Water Management Zone. Development of the scheme will require a range of consents, mainly for discretionary activities, with the exception as noted below:

- to be a Discretionary Activity, the total amount of water taken (between November and April each year) either by the scheme or in combination with other takes, must not exceed 3 l/s. Takes above this limit are non-complying (ie the resource consent process will need to pass a higher threshold test).

Water management objectives for the Lee River (TRMP Schedule 30.1) include:

- provide for protection of instream values including fisheries and natural values
- provide for recreation in the Lee (and Roding) River
- maintain contribution to Waimea River flows
- protect landscape, cultural and spiritual values
- maintain or improve existing users' security of supply to acceptable level.

Further comment on policy issues is contained in **Component 4 Report: Water Allocation Issues**.

11 Economic Analysis – Site 11 Lee

A preliminary economic assessment of the storage option for Site 11 Upper Lee was undertaken by Crighton Anderson. The overall objective was to assess the high-level economic feasibility of the potential development on the basis of two factors:

- Capital cost of augmentation – on a per hectare basis
- Opportunity cost of non-augmentation – an assessment of the economic costs that would result if the scheme did not proceed and there was a reduction in the security of supply for existing water users.

The report also addresses scheme ownership and funding options.

The full report is attached as **Appendix 9**.

12 Potential for Mitigation of Effects and Enhancement

The following **mitigation** measures could be considered (excluding land acquisition issues):

- provision of replacement road to upper Lee Valley and Richmond Forest Park
- provision of alternative road access to forestry land
- preparation of drought management plan setting out guidelines and procedures for releasing water from the reservoir in response to specified climatic and soil moisture triggers, including ramping rates to mitigate effects of reservoir level fluctuations
- dam breach warning system
- provision of system to allow native fish passage
- provision for flushing of algal growths if necessary
- consideration of ramping flows to avoid sudden changes in river flows
- consideration of periodic sediment removal and placement downstream to provide natural sediment to system
- requirement for good sediment control during construction
- removal of vegetation and topsoil from reservoir footprint prior to filling
- consideration of use of multiple level water release system to reduce effects on water quality.

Overall the project provides the following major **enhancement** opportunities:

- greater security of water supply
- positive economic impact
- improved habitat for protection of instream values
- enhancement of the values of the Waimea Estuary

Additional, more specific opportunities exist for **enhancement** as follows:

- generation of electricity
- public access to upper catchment by provision of road network
- self-sustaining (lake) trout fishery above dam
- recreational use of 'lake' (reservoir) environment (picnic areas, swimming, boating, fishing)
- creation of wetland habitat at reservoir margins for mitigation of biodiversity losses
- development of a biodiversity and rongoa restoration plan
- development of a mahinga kai harvest and maintenance plan.
- development of walkway system around reservoir (utilising land in public ownership (marginal strip)
- ecological restoration: improvement to quality of indigenous vegetation and associated habitat through pest and weed control.
- improved access to Richmond Forest Park, and development of linking tracks to main track system.

13 Applicability

This report has been prepared for the benefit of Waimea Water Augmentation Committee/Tasman District Council with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

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**Appendix 7: Water in the Waimea Basin:
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